

MCI 111 A

ML 2 A

Professional Airline Devices

Operating Instructions and Technical Data



1	General Notes.....	3
2	Characteristics of the MCI 111 A.....	4
3	Installation.....	5
3.1	Contents of package.....	5
3.2	System requirements.....	5
3.3	USB Connection (Product code "I2").....	6
3.3.1	Virtual COM Port - Driver Installation.....	6
3.3.2	USB Cable Installation.....	6
3.3.3	Cable Routing.....	6
3.4	PS2 / RS232 Connection (Product code "I1").....	7
3.4.1	PS/2 Connection - Keyboard only.....	7
3.4.2	PS/2 Connection – Keyboard with Glidepad.....	7
3.4.3	RS232 Host Connection.....	8
3.4.4	External Power Supply (optional).....	8
3.5	Host interface parameters - Factory defaults.....	9
3.6	Functional check.....	9
4	Modules.....	10
4.1	OCR Reader.....	10
4.2	Magnetic stripe reader (MSR).....	11
4.3	AUX Port (optional).....	12
4.4	2D Barcode Scanner Module (optional).....	12
4.5	Pointing device – Glidepad (optional).....	12
5	Additional Features.....	13
5.1	Flexible programming of key codes.....	13
5.2	Firmware Update.....	13
5.3	TCO Features.....	13
5.4	Encryption.....	13
6	Troubleshooting.....	14
6.1	Technical Support.....	14
7	Annex.....	15
7.1	Technical data.....	15
7.1.1	OCR Reader.....	15
7.1.2	MSR Reader.....	15
7.1.3	Electronics.....	15
7.1.4	ESD and EMC behavior.....	15
7.1.5	Connection assignment.....	16
7.1.6	Climatic parameters.....	17
7.1.7	Mechanical system.....	17
7.1.8	Protection class.....	17
7.1.9	Material and surfaces.....	17
8	Declaration of Conformity.....	18
9	FCC Warning Statement.....	18

1 General Notes

Preface for ML 2 A:

This manual basically applies to the MCI 111 A Keyboard but also to the Stand-Alone OCR/MSR device ML 2 A. In this case the keyboard part does not need to be considered.

Congratulations on purchasing this PrehKeyTec product!

The MCI 111 A alphanumeric keyboard is the ideal solution for fast and error-free input of machine-readable data.

Up to three readers provide the user with support for fast data entry:

- The OCR reader for reading passports, ID-Cards and similar documents.
- The magnetic stripe reader for credit cards, access cards, ATB tickets.
- Option "2D Barcode Scanner" for reading labels, tickets, or similar items.
- Alternative Option "AUX Port" for connecting external BCR and OCR devices.

The ergonomic design has been selected to achieve optimum adaptation to human motor function. The two internal readers operate bi-directionally, so that documents and cards can be fed through the reader in both directions. This means that the input device is ergonomic and easy-to-use for both right and left-handed users.

This keyboard replaces manual input in all situations in which fast recording of ID documents and credit card documentation is required. Example applications are airline check-in, car rental, rental of valuable items, hotel check-in, and skiing equipment rentals.

All PrehKeyTec products undergo a continuous improvement process. For this reason, technical modifications may be made without notice.

We would like to point out that improper handling, storage, actions and/or modifications can lead to malfunctions and damage during use. If you modify our products as the end user, we are in no way responsible for any warranties or liability, unless you have obtained an express, written approval for your case of operation. This applies especially to unprofessional repair and maintenance.

Any claims for damages against PrehKeyTec – regardless of the legal reason – are excluded if we are not responsible for intent or gross negligence. The above limitation does not apply to claims for damages resulting from product liability laws.

These operating instructions apply only to keyboards of the MCI family.

If you have questions or problems about your MCI keyboard, please contact your distribution partner.

Latest programming software and drivers, as well as further information is available on our web page <http://www.prehkeytec.com>. For additional help contact support@prehkeytec.de

2 Characteristics of the MCI 111 A

The MCI family is characterized especially by its ergonomic and compact design.

The MCI 111 A now supports reading OCR data, magnetic cards and AUX device data through one COM port (either virtual or RS232). The data of all wedge devices are formatted following the appropriate protocol guidelines (ARINC, SITA, etc.).

The MCI 111 A is equipped with the following modules:

- Optical character recognition device (OCR)
- Magnetic stripe reader (MSR)
- AUX device port
- 2D Barcode Scanner Module (optional)
- Pointing device "Glidepad" (optional)

The optical character recognition (OCR) device supports reading passports, ID-cards and similar machine readable documents with up to three lines of data. The MSR reads max. three tracks according to ISO 7810/7811 and ATB documents.

The MCI 111 A is available either with USB or a combined PS2/RS232 cable. If connected via USB, the module uses virtual COM port technology.

Depending on the keypad, keyboards of the MCI family have up to 145 programmable key positions. In the alphanumeric keypad design, the keys of the alphabetic section are pre-assigned according to the functions of a standard MF2 keyboard, but also here all keys can be customized by our programming software.

Programming of the individual key positions is done with our easy-to-use programming software WinProgrammer. You can find the appropriate software packages, as well as additional notes regarding programming in the *Support* section of our web page <http://www.prehkeytec.com>.



The figures in this manual might show pictures not exactly matching your customized keyboard type. However this manual basically applies to all our MCI 111 A and ML 2 A products.

3 Installation

3.1 Contents of package

Before starting to use your keyboard, please check whether all the parts shown below are present and show no obvious signs of damage:

- 1 MCI 111 A keyboard
- 2 Operating Instructions
- 3 External Power Supply (hardware RS232 devices only)
(optional for PS2 keyboard, required for ML 2 A RS232 type)



Fig. 1 Package contents

3.2 System requirements

The MCI family keyboard has been developed for use with IBM-AT-compatible PS/2 and USB systems. The keyboard can be used with all popular operating systems.

For proper operation we recommend to connect the device always directly to the computer – without additional extension cables, etc.

When equipped with USB interface, only one USB cable is required. All internal modules are connected to the internal USB hub. Installation of driver software is mandatory. To do so, please install our *CheckinPackage* prior connecting the USB device.

3.3 USB Connection (Product code "I2")

The keyboard part uses standard drivers provided by the operating system.

3.3.1 Virtual COM Port - Driver Installation

Additional driver software is required to use the wedge devices (MSR, OCR, AUX) via USB connection. Install the *PrehKeyTec Virtual COM Port* driver software before connecting the device to the PC. This driver and the utility *CheckinConfigurator* are included in our *CheckinPackage*.

Please see the Readme file included in the *CheckinPackage* for details about installation and usage. A description for unattended installation of the package is also available here.

3.3.2 USB Cable Installation



Fig. 2 USB A-Type Plug

In order to provide problem-free operation of the keyboard using USB, it must be insured that the USB interface is supported by the operating system.

In addition, insure that USB legacy support is activated in the BIOS of your PC, if the keyboard should be also active directly after booting.

Please see the description of your motherboard for instructions regarding the BIOS settings. Most mainboards only support legacy mode when connected directly to the PC's USB ports.



The operating systems Windows NT / 9x do not support the USB interface, or do so only partially. Problem-free operation is not insured in these cases.

- Install our *CheckinPackage* to preinstall the *PrehKeyTec Virtual COM Port* drivers.
- Plug in the USB cable into an USB socket of your PC.
- Standard HID drivers for the keyboard part will be automatically installed by the operating system. Then the keyboard is ready to use.
- If previously preinstalled, the virtual COM port drivers also will be installed automatically. The COM port number and other settings can be adapted with our *CheckinConfigurator*.

3.3.3 Cable Routing

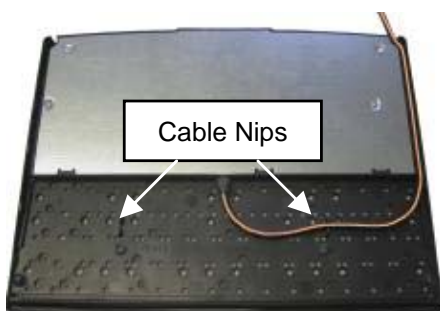


Fig. 3 cable nips

On delivery, the USB cable is routed on the **right** side (top view). If the cable outlet has to be moved to the **left** or **center**, you can do this quite easily:

Place the keyboard with the keypad facing down on a soft surface. To change the cable outlet to the left, move the connection cable as shown in *Fig. 3*. Ensure the keyboard cable being firmly pressed into the cable nips.

3.4 PS2 / RS232 Connection (Product code "I1")

This type always has a combined cable to connect all integrated modules:



Fig 4 PS2 / RS232 cable

- Keyboard (6pin PS2, violet)
- Glidepad (6pin PS2, green)
- RS232 host interface connector for (D-Sub 9pin female, black)
- Power Jack for optional external power supply (inside above RS232 connector)

3.4.1 PS/2 Connection - Keyboard only



Fig 5 PS/2 Keyboard

Installation must be executed **when the computer is switched off**. If a keyboard is already connected to the computer, please remove it first.

Now insert the **violet** 6-pin mini DIN plug (*Fig. 5*) of the keyboard cable into the keyboard socket provided on the computer. Insure that the poles are correct (coding pin).

The green mouse connector remains unconnected in this case.



Never plug in the PS/2 connectors by force. This could result in bending of the connection pins – danger of short circuits!

3.4.2 PS/2 Connection – Keyboard with Glidepad



Fig. 6 PS/2 Keyboard/Mouse

Installation must be executed **when the computer is switched off**.

If a keyboard / mouse is already connected to the computer, please remove it first.

First, insert the **violet** 6-pin mini DIN plug (*Fig. 6*) of the keyboard cable into the keyboard socket provided on the computer (violet). Ensure the correct orientation (coding pin).

Then insert the **green** 6-pin mini DIN plug for the pointing device into the PS/2 mouse socket provided of your computer (green). Ensure the correct orientation (coding pin).



Never plug in the PS/2 connectors by force. This could result in bending of the connection pins – danger of short circuits!

3.4.3 RS232 Host Connection

Installation must be executed when the computer is switched off. Insert the 9-pin D-Sub female connector ([Fig. 7](#)) into a free serial port on your PC (COM x).



Fig. 7 RS232 Connector

3.4.4 External Power Supply (optional)

Many computers, especially latest models, do not supply enough current on the PS2 ports to drive our keyboard with all included modules at the specified voltage of 5V +/-5%. Therefore we recommended using our optional external power supply for PS2/RS232 (I1) models.

Connect the appropriate PrehKeyTec power supply to the jack of above RS232 connector.



ATTENTION: Polarity is different to standard power supplies!
Only connect the appropriate PrehKeyTec power supply P/N 05198-048/0000

Notes:

- Please secure the connector plug against unwanted removal by means of a cable tie.
- To prevent damage, the jack automatically cuts off the Vcc line between keyboard and PC.
- The ML 2 A RS232 model (product code "I3") is *only* operable with external power supply. Here the power supply is included in the delivery.

3.5 Host interface parameters - Factory defaults

Factory defaults for the COM port hardware / host interface:

A 9600-8-N-1
S 9600-7-E-1

Above port parameters are valid for both connection methods RS232 and virtual COM (USB). They can be configured with our utility *CheckinConfigurator*.

3.6 Functional check

After power on the keyboard executes a self-test - all four LEDs light up for a short time. Then depending on the status of the NumLock, CapsLock and ScrollLock, the associated keyboard LEDs light up. Your MCI keyboard is now ready for use.

In addition the Accept LED displays status information for the MSR / OCR reader. As long as the OCR/MSR is not initialized by the user application, the Accept LED will be red.

4 Modules

4.1 OCR Reader

This product is equipped with our OCR (optical character recognition) module "P2" which now supports reading both OCR data and magnetic cards through *one* COM port (either RS232 or virtual USB).



Fig. 7 OCR Reader

The OCR device reads passports and similar machine readable documents with up to three lines of data. Below some key features:

- Bi-directional document feed
- Reads OCR-B data from machine-readable passports with 2 lines and maximum of 44 characters
- Reads machine-readable visas with 2 lines and max. 44 characters or 2 lines with 36 characters
- Reads machine-readable travel documents with 2 lines and 36 characters, or 3 lines and 30 characters

The entire document is evaluated and sent to the host using the appropriate protocol. A successful read is indicated by a green Accept LED, a beep is output. In case of a bad read, the LED turns red and an error beep (3x) will be output. Parameters for sound and LED can be configured with our utility *CheckinConfigurator*.



Open the booklet and only swipe the machine-readable part through the reader.
The OCR data lines must be located on the bottom side, facing towards the user.

4.2 Magnetic stripe reader (MSR)

Unlike our standard keyboards, the MCI 111 A sends the module data through *one* COM port (either RS232 or virtual USB) - in conjunction with the OCR, BCR and AUX port data.

The MSR module reads magnetic cards in accordance with ISO 7810 and 7811 (track 1, 2 and 3). In addition it is capable of reading ATB documents (tracks 1, 2 and 3) and AAMVA driver license cards.

The entire content of the card is evaluated, good track data are then sent to the host using the appropriate protocol. A successful read is indicated by a green Accept LED, a beep is output. In case of a bad read, the LED turns red and no beep will be output.

The magnetic card can be swiped through the reading device in both directions (*Fig. 8*). This provides easy and ergonomic use for both right- and left-handers.



Fig. 8 Magnetic Stripe Reader

Parameters for sound and LED can be configured with our utility *CheckinConfigurator*.



Please hold the magnetic card near the upper edge during a swipe.
The magnetic stripe must be facing down, towards the rear side of the keyboard.

4.3 AUX Port (optional)

The optional AUX (auxiliary device port) is located on the rear side of the keyboard as 9-pin D-Sub male connector. Here additional RS232 devices, such as Barcode readers can be connected.

Factory default protocol parameters for the AUX port:

9600-7-E-1	No flow control
------------	-----------------

Above port parameters can be configured with our utility *CheckinConfigurator*.

Notes:

- Devices connected to AUX port must be powered externally.
- Please remove the plastic cover in order to connect your device.
- By default, the AUX port cannot be combined with option "2D Barcode Scanner Module".



Fig. 9 AUX Port

4.4 2D Barcode Scanner Module (optional)

The optional 2D Barcode Scanner Module can be used for reading labels, tickets, or similar items. It supports 2D as well as 1D Barcodes.

Note: By default, the 2D Barcode Scanner Module is not combined with above option "AUX Port".



Fig. 10 2D Barcode Scanner

4.5 Pointing device – Glidepad (optional)

With the optional glidepad, your MCI keyboard also integrates the functionality of a mouse. No additional driver for the operating system is required to operate the pointing devices.

The drivers for the corresponding pointing device (standard two-button PS/2 or USB mouse) are installed automatically after the first start of the operating system. Thereafter, the glidepad is immediately ready for use.

The mouse arrow is controlled by moving your fingers on the glidepad surface (Fig. 11). To do this, touch the glidepad with a fingertip and move your finger, pressing lightly, in the desired direction. The mouse arrow then follows the movement of your finger.

The two buttons below the glidepad correspond to those of a two-button mouse.

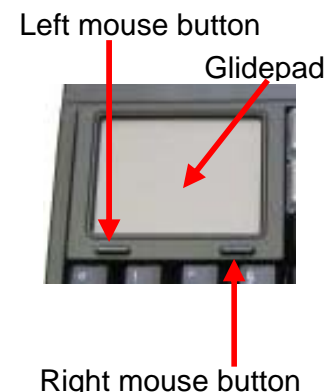


Fig. 11 Glidepad



The glidepad is a capacitive system. It is not possible to operate the glidepad while wearing thick gloves or using other non-conducting objects.

5 Additional Features

PrehKeyTec products are more than "just" keyboards. Below a brief list of additional features which can be included in our products. Please contact our sales representatives for details.

5.1 Flexible programming of key codes

All key positions can be changed to customer's demands. In the alphanumeric keypad design, the keys of the alphabetic section are pre-assigned according to the functions of a standard MF2 keyboard, but also here all keys can be customized by our programming software.

Programming of the individual key positions is done with our easy-to-use programming software WinProgrammer. You can find the appropriate software packages, as well as additional notes regarding programming in the Support section of our web page <http://www.prehkeytec.com>.

5.2 Firmware Update

The wedge device's firmware as well as the module configuration can be updated with our *CheckinConfigurator*. In case the keyboard's basic firmware needs to be updated, we also can provide our *FirmwareUpdateUtility*. Please contact support@prehkeytec.de for details and assistance.

5.3 TCO Features

To reduce service costs, our keyboard supports so-called TCO features:

- Good and Bad read counters for MSR, OCR, BCR(via AUX)
- Power-on time
- Counting individual key presses
- Static information (Serial number, Production date, Product code)
- Firmware information
- Other TCO features on request. Please contact support@prehkeytec.de for details.

For testing several TCO data of your keyboard can be read out using the *CheckinConfigurator*.

Note: The ML 2 A device does not support TCO features.

5.4 Encryption

Recent regulations enacted around patient (HIPAA) and consumer (PCI) privacy, lead PrehKeyTec to introduce *SecurEntry* for our MCI family of keyboards.

Why build Encryption into the application when you can encrypt the data in the keyboard before transmitting to the host. PrehKeyTec Engineers used advanced, processor-based keyboards to take data security to the next level. Now personal data is secured and encrypted before it ever leaves the keyboard.

Encryption capabilities are only included on request – following customer's requirements.

Please contact support@prehkeytec.de for additional detail information.

6 Troubleshooting

6.1 Technical Support

In case of questions and troubleshooting please contact our Technical Support Team:

Email: support@prehkeytec.de

Phone: +49 9776 / 7046-222

7 Annex

7.1 Technical data

7.1.1 OCR Reader

- Bidirectional document feed
- OCR-B data of machine-readable passports with 2 lines and maximum of 44 char
- Machine-readable visas with 2 lines and max. 44 char. or 2 lines with 36 char
- Machine-readable travel documents with 2 lines and 36 char., or 3 lines and 30 char
- Good/Bad read indicator (LED, Buzzer)

7.1.2 MSR Reader

- Bidirectional card swipe.
- Reads magnetic cards in accordance with ISO 7810 and 7811 (track 1, 2 and 3)
- Reads ATB documents (tracks 1, 2 and 3)
- Reads AAMVA driver license cards
- Good/Bad read indicator (LED, Buzzer)

7.1.3 Electronics

Interface Cable "I1":	2x PS/2, 1x D-Sub 9 female
Interface Cable "I2":	USB 1.1 or higher
Interface Cable "I3":	D-Sub 9 female (ML 2 A / RS232 only)
Power supply:	5V _{DC} ±5% a) I1: via PS2 (and optional external power supply) b) I2: via USB c) I3: via external power supply (ML 2 A / RS232 only)
Power consumption:	< 500 mA (without external devices)
Keyboard LEDs:	ACCEPT, NUM LOCK, CAPS LOCK, SCROLL LOCK

7.1.4 ESD and EMC behavior

Unwanted emission	EN55022, class A FCC subpart 15 class A
Immunity characteristics	EN55024

7.1.5 Connection assignment



Fig. 12.1 USB plug

USB Connector A type	
1	VCC
2	USB D-
3	USB D+
4	GND



Fig. 12.2 PS/2 plugs

PS/2 Mini-DIN 6pol. (male) For keyboard and pointing device (PS2 / RS232 type)	
1	Data
2	-
3	GND
4	+5V
5	Clock
6	-

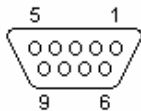


Fig. 12.3 RS 232 Host interface

Host interface D-Sub9 (DE9 type, female) OCR / MSR / ADP wedge	
1	-
2	RxD
3	TxD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	-

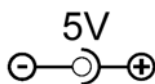


Fig. 12.4 External Power Jack

External Power Jack (for PS2 / RS232 models)	
Inner contact	GND
Outer contact	+5V



ATTENTION: Polarity is different to standard power supplies!

Only connect appropriate PrehKeyTec external power supplies, P/N 05198-048/0000.

Note: Jack automatically cuts off power between keyboard and the PC when inserting the plug.

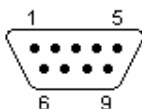


Fig. 12.5 RS 232 AUX port

AUX Device Port D-Sub 9 (DE9 type, male, for external BCR / OCR)	
1	- *)
2	RxD
3	TxD
4	- *)
5	GND
6	- *)
7	RTS
8	CTS
9	-

*) DCD(1), DTR(4) and DSR(6) interconnected.

7.1.6 Climatic parameters

Temperature ranges

Storage/transport -40°C to +60°C

Operation +5°C to +40°C

Relative humidity 5% to 93%

Air pressure 700hPa to 1060 hPa

Climatic test category 0/050/21 according to DIN-IEC 68, part 1, appendix A

7.1.7 Mechanical system

Keys

Actuating force 0.6 N

Stroke strength 10N, 1 min.

Lifetime > 30 x 10⁶ operations per contact element (typical value)

Keystroke 3.5 mm

Grid spacing 19 mm

7.1.8 Protection class

IP 54 according to DIN 40050/IEC 529

Only valid for the keypad in the direction of actuation

7.1.9 Material and surfaces

Housing ABS

Guide frame Polystyrene

Integrated circuit foil Polyester foil

Sealing membrane Trevira

Key caps PBT/POM

Contact mat Silicone rubber

8 Declaration of Conformity

This is to certify that all varieties of statements of compliance exist for MCI family.

Of course, you can request us to send you these if you provide the precise type designation (see the type label on the bottom of the device).

PrehKeyTec GmbH
Scheinbergweg 10
D-97638 Mellrichstadt, Germany
Fax: +49-9776 / 7046-299

9 FCC Warning Statement

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates uses and can radiate radio frequency energy, and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Copyright

© Copyright PrehKeyTec GmbH 2011

Published by PrehKeyTec GmbH.

PrehKeyTec GmbH reserves the right to update/modify the products described in this manual, as well as the manual itself, at any time without prior notice.

These operating instructions may not be copied, edited, transformed into electronic form or translated into other languages without prior written consent by PrehKeyTec GmbH.

Trademarks

The brand and product names mentioned in these operating instructions are trademarks / registered trademarks of the corresponding owner.

Examples:

Microsoft, Windows, Windows NT, Windows 2000, Windows XP are registered trademarks of Microsoft Corporation in the United States and other countries.